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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,340	09/23/2003	Hidehito Iisaka	117281	9285

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EXAMINER

MOON, SEOKYUN

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/667,340	Applicant(s) IISAKA, HIDEHITO	
	Examiner Seokyun Moon	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-12, and 14-23 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-12, 14 and 23 is/are allowed.
- 6) ☒ Claim(s) 1,3-9, 15-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments regarding **claim 1** filed on May 22, 2006 have been fully considered but they are not persuasive.

The Applicant discloses that the combination of Negishi and Nose would not have been obvious to one of ordinary skill in the art at the time of the invention, since Nose teaches a horizontal line inversion drive scheme while Negishi employs a surface inversion drive technique.

However, the idea of combining Negishi and Nose is not based on the principle of combining Negishi and Nose's data driving schemes having different polarities but on the principle of replacing the two scanning driver included in Negishi with a single scanning driver, as taught by Nose, in order to reduce the power consumption of the display, to simplify the required electronic circuitries in the display, and to provide more space for the display screen area.

2. Applicant's arguments with respect to **claims 1 and 8** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1 and 3** are rejected under 35 U.S.C. 102(b) as being anticipated by Akihiko (JP. Pub. No. 11-295697).

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As to **claim 1**, Akihiko [drawing 6] teaches a liquid crystal device comprising:

plural data lines ("615");

plural scanning lines ("614") intersecting the data lines;

pixels ("613") connected to said data lines and said scanning lines; and

a driver section ("611") which supplies to each of said plural data lines ("615") an image signal for which the polarity is inverted into a positive polarity potential or a negative polarity potential, for each unit period, and which supplies for each one horizontal period plural pulse signals which each rise at a different timing, to each of said plural scanning lines while skipping a predetermined number of said plural scanning lines [drawing 1];

wherein driving by said driver section is performed such that the polarity of the image signals supplied to pixels corresponding to a first scanning line of the plural scanning lines, is the same as the polarity of the image signals supplied to pixels corresponding to a second scanning line that is selected before the first scanning line, and adjacent to the first scanning line [drawing 1]; and

in one vertical period, an application time of a positive polarity potential and an application time of a negative polarity potential of the image signal supplied to each data line are substantially equal [drawing 1].

As to **claim 3**, Akihiko [drawing 1] teaches that in one vertical period, two pixel groups corresponding to two adjacent scanning lines are in a condition where a potential of the same polarity is written for a time of not less than 50% of the one vertical period.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 8, 9, and 22** are rejected under 35 U.S.C. 102(e) as being anticipated by Yun (U.S. Pub. No. 2003/0189537 A1).

As to **claim 8**, Yun [fig. 5] teaches a liquid crystal device, comprising:

plural pixels provided in an array inside an image display area,; and

a driver section (a combination of *"timing controller 18"*, *"line memory 38"*, and *"data driver 16"*) that supplies image signals to the pixels,

wherein the driver section supplies first image signals (*"odd-numbered pixel data"*) and second image signals (*"even-numbered pixel data"*) that are generated by delaying the first image signals alternately every one horizontal period; and

a polarity of the first image signal is different from a polarity of the second image signal [par. (0049) lines 5-13].

As to **claim 9**, Yun [fig. 8] teaches the liquid crystal device, wherein a memory (*"line memory 38"*) is provided in the driver section,

the first image signals are delayed by storing the first image signals in the memory, and

the first image signals stored in the memory are supplied as the second image signals [par. (0057) lines 9-12 and par. (0058)].

As to **claim 22**, all of the claim limitations have already been discussed with respect to the rejection of claim 8.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1, 3-7, and 15-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Negishi et al. (U.S. Pat. No. 5,907,314, herein after referred to as "Negishi") in view of Nose et al. (U.S. Pat. No. 6,819,311 B2, herein after referred to as "Nose").

As to **claim 1**, Negishi [fig. 11] teaches a liquid crystal device (*"liquid-crystal display apparatus"*) comprising:

plural data lines (*"a plurality of upper signal electrodes Y1, Y2, ..., YN"* and *"a plurality of lower signal electrodes Y11, Y22, ..., YNN"*)

plural scanning lines (*"a plurality of upper scanning electrodes X1, X2, ..., XM"* and *"a plurality of lower scanning electrodes XM+1, XM+2, ..., XN"*) intersecting the data lines;

pixels connected to said data lines and said scanning lines; [col. 20 lines 34-63]
and

a driver section ([fig. 10] and [fig. 11]: a combination of *"upper signal electrode drive circuit 112"*, *"lower signal electrode drive circuit 113"*, *"scanning electrode drive circuit 110"*, and *"video signal generator 9"*) which supplies to each of the plural data lines an image signal for which the polarity is inverted into a positive polarity potential or a negative polarity potential, for each unit period (*"half-field interval"*) [fig. 16] [col. 26 lines 39-45 and col. 54-61], and which supplies for each one horizontal period plural pulse signals which each rise at a timing, to each of the plural scanning lines while skipping a predetermined number of the plural scanning lines;

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wherein driving by the driver section is performed such that the polarity of the image signals supplied to pixels corresponding to a first scanning line of the plural scanning lines, is the same as the polarity of the image signals supplied pixels corresponding to a second scanning line that is selected before the first scanning line, and adjacent to the first scanning line [fig. 16]; and

in one vertical period, an application time of a positive polarity potential and an application time of a negative polarity potential of the image signal supplied to each data line are substantially equal. [col. 26 lines 39-45 lines 54-61].

Negishi does not teach a driver section supplying for each one horizontal period plural pulse signals which of each rise at a different timing, to each of plural scanning lines.

However, Nose [fig. 1] teaches a method of driving each of a plural scanning lines ("*scanning lines 2*") at a different timing and driving each of a plural data lines ("*signal lines 3*") sequentially corresponding to the different driving timing for each of the plural scanning lines [col. 8 lines 13-41].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Negishi to include a single scanning electrode drive circuit rather than to include two scanning electrode drive circuits, as taught by Nose, in order to simplify the circuitry structures of the driver circuits, to reduce power consumption required for operating the driving circuits, and to reduce the space required for installing the driver circuits, thus to provide more space for the display screen.

As to **claim 3**, Negishi [fig. 16] teaches that in one vertical period ("*1-field interval*"), two pixel groups corresponding to two adjacent scanning lines being in a condition where a potential of the same polarity being written for a time of not less than 50% of the one vertical period.

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As to **claim 4**, Negishi does not teach the unit period in which the polarity of the image signal is inverted to correspond to one horizontal period.

However, Negishi as modified by Nose [fig. 1] discussed with respect to the rejection of claim 1 would result in supplying positive polarity potential to a scanning line (ex. Nose: "G1") for first horizontal period and negative polarity potential to another scanning line (ex. Nose: "Gj") for second horizontal period which is adjacent to the first horizontal period.

Therefore, Negishi as modified by Nose discloses the unit period in which the polarity of the image signal is inverted to correspond to one horizontal period.

As to **claim 5**, Negishi as modified by Nose teaches the liquid crystal device (Negishi: "*liquid-crystal display apparatus*"), wherein when the number of the plural scanning lines is $2m$ (Nose [fig. 1]: " n ") lines, said driver section supplies a pulse signal rising at a timing corresponding to the application period of said positive polarity potential to a predetermined scanning line (Nose [fig. 1]: "G1"), and then supplies a pulse signal rising at a timing corresponding to the application period of the negative polarity potential to a scanning line separated by m lines from said predetermined scanning lines (Nose [fig. 1]: "Gj"), and thereafter repeats the aforementioned operation, to thereby write a potential of the same polarity to pixel groups corresponding to adjacent scanning lines for each two horizontal periods.

As to **claim 6**, Negishi as modified by Nose teaches the liquid crystal device (Negishi: "*liquid-crystal display apparatus*"), wherein when the number of the plural scanning lines is $4m$ lines (Nose [fig. 11]: " n "), the driver section supplies a pulse signal rising at a timing corresponding to the application period of the positive polarity potential to a predetermined scanning line (Nose [fig. 11]: "G1"), supplies a pulse signal rising at a timing corresponding to the application period of the negative polarity potential to a

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scanning line (Nose [fig. 11]: " $G_{n/4+1}$ ") separated by m (Nose [fig. 11]: " $n/4$ ") lines from the predetermined scanning line (Nose [fig. 11]: " $G1$ "), supplies a pulse signal rising at a timing corresponding to the application period of the positive polarity potential to a scanning line (Nose [fig. 11]: " $G_{n/2+1}$ ") separated by $2m$ (Nose [fig. 11]: " $n/2$ ") lines from said predetermined scanning line and supplies a pulse signal rising at a timing corresponding to the application period of the negative polarity potential to a scanning line (Nose [fig. 11]: " $G_{3n/4+1}$ ") separated by $3m$ (Nose [fig. 11]: " $3n/4$ ") lines from the predetermined scanning lines, and thereafter repeats the aforementioned operation, to thereby write a potential of the same polarity to pixel groups corresponding to adjacent scanning lines for each four horizontal periods.

As to **claim 7**, Negishi [fig. 12] teaches a frame memory ("*memory unit 124*") which temporarily stores image data and then reads out the image data for writing to a pixel in accordance with a scanning sequence of said scanning lines, being provided in said driver section ([fig. 10] and [fig. 11]: a combination of "*upper signal electrode drive circuit 112*", "*lower signal electrode drive circuit 113*", "*scanning electrode drive circuit 110*", and "*video signal generator 9*") [col. 22 lines 24-33].

As to **claim 15**, all of the claim limitations have already been discussed with respect to the rejection of claim 1.

As to **claim 16**, Negishi teaches in one vertical period, an application time of a positive polarity potential ("*former half of every 1-field interval*") and an application time of a negative potential ("*latter half of every 1-field interval*") of the image signal supplied to each data line being substantially equal [col. 26 lines 39-45 and lines 54-60].

As to **claim 17**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

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As to **claim 18**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 19**, all of the claim limitations have already been discussed with respect to the rejection of claim 5.

As to **claim 20**, all of the claim limitations have already been discussed with respect to the rejection of claims 6.

As to **claim 21**, Negishi does not expressly disclose the skip scanning of the scanning line being performed at a frequency of not less than 100Hz.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention to specify or set the limitation for the value of the scanning frequency to be not less than 100 Hz since driving two display portions which are separated each other with a low frequency causes flicker problem, and thus interferes the expected operation of the display.

Allowable Subject Matter

9. **Claims 10, 11, 12, 14 and 23** are allowed.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 15, 2006

S.M.



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